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SCHEDULE OF MEETINGS

1955	
5-9 December	**Joint WHO/UN Advisory Group on Social and Medical Social Work, Amsterdam**
6-15 December	**Study Group on Filariasis, Kuala Lumpur**
12-14 December	**Conference on Malaria, Belgrade**
12-17 December	**Seminar on Environmental Sanitation, Ibadan, Nigeria**
12-17 December	**Expert Committee on Maternal and Child Health Administration, Geneva**
14-16 December	**Meeting of National Fellowships Administrators, Geneva**
1956	
9 January	**Standing Committee on Administration and Finance, Geneva**
17 January	**Executive Board, seventeenth session, Geneva**

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MALARIA IN SARAWAK AND BRUNEI

Before a malaria-control pilot project was undertaken by WHO in 1952, little was known about malaria in Sarawak; the " malaria map " of the country was " virtually blank ". It was known that in British North Borneo and in other parts of the island *A. leucosphyrus* was the principal vector of malaria, and it was thought likely that this was probably the vector of malaria in Sarawak as well. Control of *A. leucosphyrus*-carried malaria by residual spraying of insecticides had not yet been attempted.

The WHO project was a twofold one comprising a general malaria survey of the country and a field trial of residual insecticides. Reports by the malariologist assigned to this project sum up the findings of the survey and the results of the malaria-control experiment.[1]

Malaria survey of Sarawak and Brunei

Making a malaria survey of Sarawak was no easy matter: it is a thinly populated country with very poor communications and almost no roads, and most of the villages had to be reached by canoe or on foot. In addition, there are many languages and dialects, and many different customs and habits. Nevertheless, several hundred villages were visited, the co-operation of the local populations was secured, and nearly 10 000 persons were examined.

Geographically and geologically, the country may be divided into alluvial coastal plains, hilly country, and mountaincus areas (in the interior); only the latter two are important from the standpoint of malaria prevalence. Climatic conditions are favourable for malaria transmission throughout the year.

According to a 1947 census—the most recent one available—the population of Sarawak is 546 385. This population is composed of a great variety of racial and cultural groups, including Sea Dayak (or Iban), Chinese, Malay, Land Dayak, Melanau, other indigenous groups, other non-indigenous Asian groups, and Europeans, listed in order of decreasing numerical importance.

The small State of Brunei, which is also on the north-west coast of Borneo and which forms two enclaves in the Sarawak territory, has climatic conditions similar to those found in Sarawak. Its population, according to the 1947 census, is 40 657.

Contrary to what the climatic and general conditions would suggest, the survey revealed that malaria prevalence in Sarawak and Brunei is relatively low. Topography seems to be an important factor in malaria prevalence: higher spleen- and parasite-rates are found in the hilly and mountainous areas.

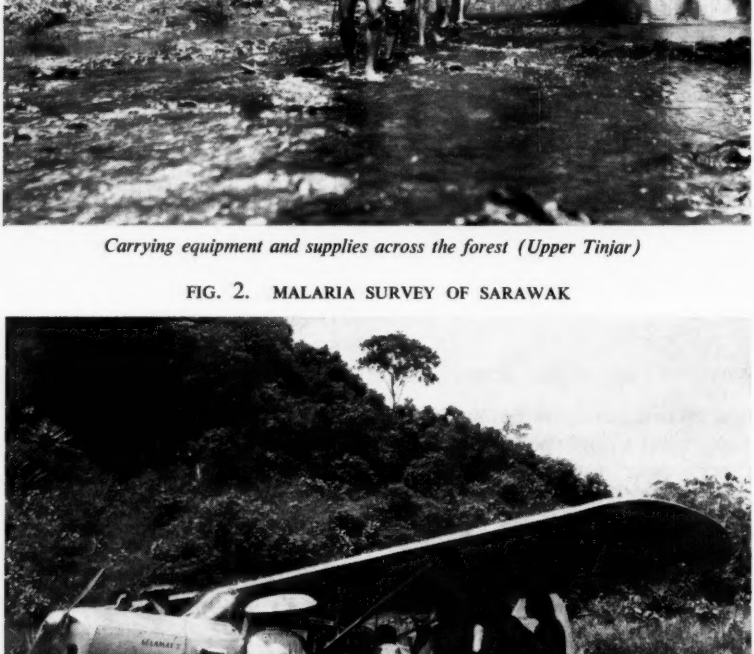
Of interest is the fact that the prevalence of malaria is not uniform among different racial groups living in the same area. For example, the Dayak, Kayan, and Kenyah, who all have a semi-nomadic way of life, living in so-called " longhouses " (villages under a single roof) and making temporary shelters or farms on the slopes of the mountains where they plant their rice, suffer much more from malaria than the Malays and Chinese. Such differences are believed to be attributable to habits and ways of living rather than to any racial factor. During the months when the

[1] Much more detailed information about the project is contained in two papers to be published in the *Bulletin of the World Health Organization* : " Malaria in Sarawak and Brunei ", by J. de Zulueta, and " A malaria-control experiment in the interior of Borneo ", by J. de Zulueta & F. Lachance.

FIG. 1. MALARIA SURVEY OF SARAWAK

Carrying equipment and supplies across the forest (Upper Tinjar)

FIG. 2. MALARIA SURVEY OF SARAWAK



An aeroplane of the Borneo Evangelical Mission was used to reach remote villages in the Upper Baram District. Onlookers are forest dwellers, Nomadic Punan.

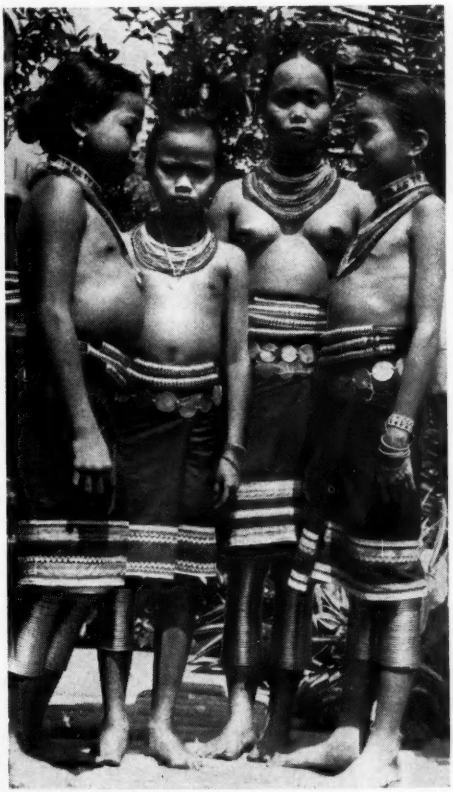
Dayak live in small shelters or rice farms, they are less protected against mosquitos than in the longhouses. In addition, domestic animals capable of deflecting anophelines from human beings are fewer in the farms than in the longhouses; and, assuming that breeding conditions are uniform, the number of anophelines per person would be higher in an isolated farm than in a longhouse inhabited by several hundred people. On the other hand, the Chinese, who live in the bazaars, are probably less exposed than the Dayak and, being more conscious of the danger of malaria, probably protect themselves better. By contrast, however, the Punan, although they are a nomadic group, also have a comparatively low malaria level. A possible explanation for this is that they do not live long enough in one place to infect *Anopheles* mosquitos and set up malaria transmission.

Another fact which seems to belie any relationship between the prevalence of malaria and racial characteristics as such is that the Malays in Sarawak, who live on the coast and along the great rivers, suffer little from malaria, whereas relatively high spleen- and parasite-rates are found among the rural Malays in Brunei, where the prevalence of malaria in the coastal areas is high, probably because of the proximity of hills and mountains to the sea.

Malaria-control experiment

After visiting the five administrative divisions of Sarawak, the WHO team decided to start the control experiment in the Baram District, in the northern part of the country. This district, although it presented problems because of its scattered population, complete lack of roads, and great distances to be covered, had the advantage of offering for observation a well-isolated population living with hardly any contact with the outside world. Supervision of the work was difficult because during 1952 and 1953 only Dr J. de Zulueta, the WHO malarialogist, was available for the project. However, thanks to the assistance of all the government officers concerned and to the interest and co-operation of the people of the district, it was possible to make a trial of malaria control by spraying with residual insecticides.

FIG. 3. MALARIA SURVEY OF SARAWAK



Land Dayak women in festival dress. The girls in the foreground have enlarged spleens (Upper Serian District)

FIG. 4. MALARIA SURVEY OF SARAWAK

Kenyah family sitting on the solidly built platform of their communal longhouse (Upper Baram)

FIG. 5. MALARIA SURVEY OF SARAWAK

A Sea Dayak rice farm built in a forest clearing, Kanowit District

FIG. 6. MALARIA CONTROL IN SARAWAK

Northern Sarawak, showing the positions of the DDT, BHC, and check areas

Figure 6 shows the positions of the test and check areas.

The pre-operational survey of the Baram DDT area showed that children in the age-group 2-4 years had the highest parasite-rate, and that the highest spleen-rate was found in children 5-9 years old; the rates in adolescents and in adults were also high, however, indicating that immunity or tolerance had not been acquired. In fact, adults suffered from overt attacks of malaria, with marked clinical symptoms, throughout the study area.

Entomological observations were made in the demonstration area before and after spraying, and systematic observations were made in the Tinjar check area during 13 months. It was soon found that in both areas *A. leucosphyrus* formed the bulk of the captures made in longhouses and farms. The most important entomological discovery was the finding that *A. leucosphyrus* Dönitz, 1901, was the vector in the area and not *A. leucosphyrus balabacensis*, the known vector in British North Borneo. Among 7568 *A. leucosphyrus* dissected, 30 gland infections were detected—a sporozoite-rate of 0.40%. *A. barbirostris* proved to be a secondary vector in both the check and the test area.

DDT, at the rate of 2 g per m^2, was used in residual spraying every six months over an area of 1800 square miles (4680 km^2) with a population of 5622 inhabitants, and BHC, at the rate of 0.10 g of gamma isomer per m^2, every three months over an area of about 160 square miles (414 km^2) with a population of 772 inhabitants.

After 21 months of DDT protection, the spleen-rate in children 2-9 years old was reduced from 51.8% to 25.1%, and the parasite-rate from 35.6% to 1.6%. Similar results were obtained in the BHC area. During the period of observations, spleen- and parasite-rates rose in the check area. The monthly examination of infants' blood showed that, with only two exceptions, all the infants born after the first spraying were free from malaria. The two new infections were acquired in unprotected houses built shortly after the spraying.

The first DDT spraying was limited to the Baram valley, but the second was extended to the Patah and Akah rivers, two tributaries of the Upper Baram. To solve the problem of transport of insecticides, an air-drop of DDT supplies by the British Royal Air Force at Lio Matu was arranged by the Director of Medical Services of Sarawak. The drop took place in February 1954, and the DDT parachuted was used during the operations of March and September of that year.

The estimated cost of the DDT spraying operations was relatively high—US $0.45 per person per year. This was due, however, mainly to two factors: difficulties of communications (54% of the time was spent travelling), and the need for spraying two dwellings for each family—their part of the communal longhouse and their individual rice farm. It is believed that further experience may show that the surface sprayed, and hence the amount of insecticide used, can be reduced. DDT spraying every six months is preferable to BHC spraying every three months, because of the great difficulties with regard to communications and transport.

The results of this experiment show that *A. leucosphyrus*-carried malaria in Sarawak can be effectively controlled by residual spraying of insecticides, an indication that eradication is feasible.

EPIDEMIOLOGY AND ETIOLOGY OF Q FEVER

Q fever is one of the diseases which are currently the subject of considerable study. Its etiology is known, but its natural history has not been fully determined; the link between its natural and domestic hosts is still conjectural in certain aspects. Since determination of its distribution throughout the world was an indispensable prelude to any large-scale control or prophylactic action, WHO, in 1950, recommended and began to assist in surveys of its prevalence in 31 countries. The results of these surveys, supplemented by those of studies made in other countries, have recently been published, under the authorship of M. M. Kaplan and P. Bertagna.[1]

Table I shows that Q fever is present in 51 countries, in man or in animals, but that it is unknown in certain others—Ireland, the Netherlands, the Scandinavian countries, Finland, and New Zealand, in particular. In these latter countries there is relatively little importation of cattle, which may account for their being free from the infection.

Laboratory tests for the detection of *Rickettsia burneti* antibodies in human and animal sera are the sole means of making a definitive diagnosis of Q fever, since the symptomatology in man or in animals is non specific and the infection is often clinically inapparent. In the WHO-assisted surveys, the suggested procedures were the complement-fixation test combined, where possible, with attempted isolation of *R. burneti* in guinea-pigs. The complement-fixation test was chosen in preference to the agglutination test because it calls for smaller amounts of antigen and is easier to read and interpret. Three approaches were advised for the determination of the presence of Q fever in a locality: (1) the examination of blood sera of employees in fat-rendering plants and abattoirs; (2) inoculation into guinea-pigs of milk samples pooled from 100 to 200 animals, with pre- and post-inoculation examination of the guinea-pig sera for complement-fixing antibodies; and (3) examination by complement-fixation test of individual animals selected at random in an area. WHO supplied the antigens (Henzerling and Nine Mile strains of *R. burneti*) and positive control serum (guinea-pig) for antigen titration.

In another article on Q fever, M. G. P. Stoker, Zoe Page & B. P. Marmion [2] discuss the problems which arose during the survey in England. Although it had been thought that the Henzerling and Nine Mile strains were interchangeable, differences in sensitivity were found between them in examinations of human and sheep sera. The authors come to the conclusion that at present no antigen strain has a sufficiently wide range of specificity to react equally well with antibodies against all the local strains of *R. burneti*. Because of this, comparison of the results of serological tests carried out with different antigens in different regions may not always be valid where the diagnosis of an individual case is involved.

In a third article devoted to the subject of Q fever, M. G. P. Stoker & B. P. Marmion [3] give a general review of the natural history of *R. burneti*. After having summarized present knowledge of *R. burneti*, the authors list and discuss questions still to be answered, in particular those concerning the passage of the rickettsia from its natural wild hosts (ticks and small mammals) to its domestic hosts (cows, sheep, and goats). A theory has been put forward which suggests the evolution

[1] *Bull. Wld Hlth Org.*, 1955, 13, 829

[2] *Bull. Wld Hlth Org.*, 1955, 13, 807

[3] *Bull. Wld Hlth Org.*, 1955, 13, 781

TABLE I. GEOGRAPHICAL DISTRIBUTION OF Q FEVER AND SPECIES AFFECTED

Country	Diagnostic test used		Infected species
	complement-fixation test	isolation of organism	
Africa			
Algeria	+	+	Man, tick
Belgian Congo (Ruanda-Urundi)	+	+	Man, sheep, goat, cattle, horse, pig, dog, tick, body-louse
Cameroons (Douala and east and north-east)	+		Man, cattle
Egypt (Cairo, Aswan, Nile valley)	+	+	Man, sheep, goat, cow, bull, water buffalo, tick
French Equatorial Africa (Ubangi-Shari, Upper Volta)	+		Man, sheep, goat, cattle, donkey, dog
Kenya (Muguga, Nairobi)	+		Man, cattle
Libya	+		Man
Madagascar	+		Man
Morocco (throughout)	+	+	Man, sheep, goat, cattle, gerbil, tick
Portuguese Guinea and São Tomé	+	+	Goat, cattle, birds, reptiles, tick
Southern Rhodesia	+		Man
Sudan	+	+	Camel, bull, tick
Tunisia	+		Man, sheep, goat, cattle
Union of South Africa (Western Transvaal; Wellington, Cape Province)	+	+	Man, cattle
America			
Argentina	+		Cattle
Brazil	+		Man
Canada (Quebec)	+		Man
Martinique	+		Man
Mexico	+		Man, sheep, goat, cattle
Panama	+	+	Man
America (cont.)			
United States of America (Arizona, California, Illinois, Massachusetts, Montana, New York, Ohio, Oregon, Texas, Virginia, Washington)	+	+	Man, sheep, cattle, tick
Venezuela (Caracas)	+		Man
Asia			
Ceylon	+		Man, sheep, goat, cattle, buffalo
China (Peking)	+		Man
India (Bombay, Madras, Coonoor)	+		Man, sheep, goat, cow, bullock
Indonesia	+		Cattle
Iran (various provinces)	+		Man, sheep, goat, cow, dromedary
Iraq (Habbaniya)	+		Man
Israel	+	+	Man, cattle
Japan (Kumamoto, Kanagawa, Okayama)	+		Man, sheep, goat, cattle
Jordan	+		Sheep, goat, cattle, camel
Lebanon	— (600 cattle sera in 1954) + (capillary agglutination test on milk samples in 1955)		
Malaya	+		Man, goat, cattle
Pakistan	+		Camel
Turkey (20 of 63 vilayets)	+	+	Man, sheep, goat, cattle, buffalo, tick
Union of Soviet Socialist Republics (Central Asian oblasts)	+		Man, cattle

TABLE I. GEOGRAPHICAL DISTRIBUTION OF Q FEVER AND SPECIES AFFECTED (continued)

Country	Diagnostic test used: complement-fixation test	Diagnostic test used: isolation of organism	Infected species
Europe			
Austria (Tyrol, Carinthia)	+	+	Man, sheep, goat
Bulgaria (Sofia, Plovdiv)	+	+	Man, sheep, goat
Cyprus	+		Man, sheep, goat, cattle
Czechoslovakia (Prague)	+	+	Man, sheep
Denmark	— (man and cattle ; 1700 sera tested)		
Finland	— (man and cattle ; 3000 sera tested)		
France (Seine, Paris, Ardèche, Vaucluse, Allier, Montpellier)	+	+	Man, sheep, cattle, dog, pig
Germany, Federal Republic (Hamburg, Eifel, Baden, Württemberg-Hohenzollern, Stuttgart)	+	+	Man, sheep, goat, cattle
Greece	+	+	Man, sheep, goat
Hungary (Budapest)	+		Man
Iceland	— (?) (few human and sheep sera tested)		
Ireland	— (man and cattle ; 800 sera tested)		
Italy (throughout)	+	+	Man, sheep, goat, cattle, horse, dog, pig, goose, pigeon
Netherlands	— (man and cattle ; 3200 sera tested, 2 doubtful reactions at 1/16)		
Norway	— (cattle)		
Europe (cont.)			
Poland	— (?)(man; 1700 sera tested, 7 doubtful reactions below 1/16)		
Portugal (throughout)	+	+	Man, sheep, goat, cattle, tick
Romania (Bucharest)	+	+	Man
San Marino	+		Man, sheep, cattle, pigeon (?)
Spain (Madrid and various provinces)	+	+	Man, cattle, dormouse, wild rabbit, tick
Sweden	— (man and cattle ; 1100 sera tested)		
Switzerland (Aargau, St. Gallen, Zürich, Engadine)	+	+	Man, sheep (?), goat, cattle (?)
Union of Soviet Socialist Republics (Moscow oblast)	+		Man, cattle
United Kingdom of Great Britain and Northern Ireland (Devon, Kent, London, Scotland, Wales)	+	+	Man, sheep, goat, cattle, tick
Yugoslavia (Belgrade ; Sokol, Bosnia ; Ogulin, Croatia)	+	+	Man, sheep, cattle
Oceania			
Australia (New South Wales, Northern Territory, Queensland, South Australia, Victoria)	+	+	Man, cattle, bandicoot, tick
New Zealand	— (1400 sera tested) (Imported animals showed infection in quarantine)		

of *R. burneti* during successive cycles: The first cycle is held to be a wild one, observed only in Australia on the small island of Moreton, where the rickettsia is maintained by ticks and bandicoots in the absence of cattle. The second cycle is a domestic one. The infection is supposed to pass from wild animals to cows, sheep, and goats through the intermediary of ticks, with a varied range of hosts, and to be maintained by domestic animals thanks, perhaps, to different ticks, limited to the cow, sheep, and goat. Finally, Q fever could be maintained exclusively by cattle, without the intervention of ticks, through infected placentae.

A special feature of *R. burneti*, differentiating it from other pathogenic rickettsiae, is its adaptation to growth in the placenta and mammary glands of cows, ewes, and goats. The rickettsiae are excreted at the time of parturition. In regions with a hot, dry climate, such as California, the placentae dry in the open and are finally reduced to dust. Owing to its exceptional resistance to heat, sunlight, drying, and the usual disinfectants, *R. burneti* survives in this dust, which infects animals inhaling it. In this case, the infection maintains itself in a closed circuit and constitutes a partly artificial cycle, brought about by stock-raising methods. This type of transmission may not be seen in areas where the climate is unfavourable and where stock-raising methods are different; ticks may then play a more important role as vectors.

Serious gaps in knowledge of Q fever prevent the establishment of a link between these three cycles. Indeed, although the ticks, of which 22 species have been found to be infected in nature, are considered to be the chief natural vectors, there is no proof that they play a part in the systematic transmission of the disease from wild animals to domestic ones. Certain authors even adopt the viewpoint that the numerous localizations and varied hosts of *R. burneti* are a sign of a more primitive state, an absence of specialization in this micro-organism which is incompatible with the evolutionary theory.

The exceptional resistance of *R. burneti* to adverse conditions is probably an important factor in the etiology of Q fever. Besides its ability to survive relatively high temperatures, drying, and disinfectants, *R. burneti* shows a remarkable resistance to circulating antibody in the tissues of its mammalian hosts. Study of this apparently paradoxical fact led to the discovery of two phases in the growth of this rickettsia in the laboratory. When freshly isolated from the tissues and during the first passages of the culture on the yolk-sac of the hen's egg, the rickettsial suspensions fail to agglutinate with homologous or heterologous anti-*burneti* sera. After a certain number of passages, a change takes place and the suspension becomes agglutinable. This resistance to antibodies in the host organism affords, in particular, an explanation of the survival of *R. burneti* from one parturition to another.

Man is the only host of *R. burneti* who develops a clinical illness following infection, i.e., fever, headache, and often pneumonia. Q fever has, so far, never appeared in the form of a true epidemic spreading by transmission from man to man, but inter-human transmission in hospitals has been reported. More or less numerous sporadic cases occur in regions where Q fever is endemic in cattle, sheep, and goats. Inapparent infections are frequent, as shown by the presence of antibodies in the serum; the latter may persist even several years after the infection. Man usually becomes infected by inhaling infected dust or droplets, although the drinking of contaminated milk and water may also cause infection.

For the time being, it is clear that man is not an important biological host of *R. burneti*. He becomes infected only accidentally through the intermediary of domestic animals. Nevertheless, the possibility cannot be excluded that *R. burneti*, which seems to develop very well in the human body, might

adapt itself to growth in the respiratory tract and, on being excreted through coughing and spitting, might spread the disease from man to man. A case in which several persons were infected by the sputum of a patient has been reported. It is therefore not impossible that we are approaching an adaptation of *R. burneti* to man, who would thus be added to the list of warm-blooded animals acting as hosts for this rickettsia.

PUBLIC HEALTH IMPLICATIONS OF THE AGING OF POPULATIONS

Conclusions of a WHO Meeting *

In many populations, particularly in those of highly industrialized regions, the proportion of persons past 65 years of age is steadily increasing. A figure of 10% of the total population is not uncommon; in Germany, for example, the percentage was 4.8% in 1880 and 7.5% in 1939, and today it is 10%; the figure is expected to be about 13% by 1972.

This aging of the population implies problems of great significance for social and health services. Industrialization, housing shortages, and general changes in the social picture of many countries are leading to disruption of family ties; and more and more the aged are finding it difficult to retain their place in the family circle, particularly if they are without financial means or if they fall ill. The care of this segment of the population is therefore devolving increasingly upon the State.

Home care

Home care of the aged, in health and in sickness, should be encouraged whenever it is medically possible. If it is necessary to admit an old person to hospital, he should be discharged as quickly as his physical condition permits, in order to avoid prolonged separation from his home environment and the psychological complications which often result from such a separation.

What does home care mean in terms of the health and social services of a government ? First, it calls for the whole-hearted co-operation of a team of skilled workers, including general practitioners, trained nurses, home helps, medical auxiliaries of one kind or another, and voluntary or official visitors. Health departments could provide and organize many valuable services based essentially on the home—e.g., clubs for the aged, and domestic help for household tasks and the preparation of meals. Technical staffs could see to it that the aged enjoy special amenities and comforts, including suitable housing equipment (special hand-rails on stairs and baths, good lighting and heating, etc.). In many cases the provision of a reasonable standard of life for the aged hinges upon financial considerations; but the cost of good home care should be weighed against the high capital and maintenance charges of institutions and, above all, of hospitals. Further, many of the simple services for the aged could be efficiently provided by voluntary bodies, especially visiting services and help in shopping and household chores.

Sometimes a simple disability, such as one related to lack of proper care of the feet,

* Based on a summary report on the technical discussions at the fifth session of the Regional Committee for Europe, prepared, at the Committee's request, by Professor J. M. Mackintosh, of the London School of Hygiene and Tropical Medicine.

may interfere with the full enjoyment of age and the capacity for the simple employment that makes the day seem shorter. Skilled services in caring for simple health needs are essential; but this, too, presents problems from a personnel standpoint. Already the increased home care of the old is adding to the burden of work of general practitioners and their staffs. It has been stated, for example, that in one urban area the family doctor is paying three times as many professional visits to people over 65 as to the whole of the younger age groups; and in the case of the district nurse, eight visits are being made to the elderly for every one to the other population groups.

Age and employment

Many crucial problems of the aging population are bound up with that of employment. Limiting the employment of the aged by fixing a recognized retiring age often stems as much from the economic difficulty of finding employment for the young as from the actual inability of the aged to carry on in their jobs. Retirement might be more readily accepted in many instances if there were no legal prohibition against taking remunerative work while drawing a pension, which is a common proviso.

In Norway a survey has been made recently among a group of workers aged 60 to 65 to find out whether or not the workers (*a*) thought themselves fit to continue working at their existing jobs, (*b*) would prefer to take a lighter job, or (*c*) would like to give up work altogether. At the same time, industrial physicians were asked to assess the fitness of the employees in question for their work. It was found that a high proportion were physically able to continue their work. The workers' views, however, were governed largely by financial considerations, that is, by whether or not they could retain their pensions and at the same time take other remunerative work and thus avoid a sudden drop in their standard of living.

Financial considerations aside, effective socio-economic care of the aged requires that, if possible, they be given remunerative employment, for the sake of the therapeutic value of such employment. Subject to " therapeutic selection " of simple work for short periods each day, it is preferable to permit the aged to work without loss of pension rights. As in the case of the young, however, it is necessary to study each individual; raising or lowering an arbitrarily established retirement age is no solution. An age level is merely a legal convenience—" a good servant but a bad master ".

Prophylaxis

Prevention of the aging process may be considered from two aspects: measures to delay or mitigate the process itself, and measures to prevent, or at least to delay, the onset and progress of disease.

Generally speaking, we are not yet in possession of knowledge which permits us to take prophylactic measures against aging. However, important studies on this subject are in progress, with emphasis being laid on nutritional and other factors which have an effect on the development of arterial changes. One line of research which is being pursued is study of the aging process through periodic medical examinations of persons during their middle years. Experiments along this line have been encouraging, and the response excellent: in some countries there has been 95% agreement to voluntary medical examination for this purpose.

Studies in Sweden have revealed an excessive mortality among men between the ages of 45 and 75, particularly in the big cities. It is believed that this mortality may be traced to the strains of modern life and to

consequent cardiovascular diseases, such as arteriosclerosis and hypertension. This points to the importance of psychological factors in the " prophylaxis of age ".

Much more could be done to prevent disease and to treat early conditions which can cause great distress and contribute to aging and incapacity. In this domain, too, research is needed, not only on the physical conditions associated with age, but also on the more troublesome mental states to which the old are frequently subject.

Hospitals and institutions

As has been pointed out, it is better to avoid hospitalization of the aged as much as possible and to limit stay in hospital to the period during which such a stay is therapeutically required, and no longer. One of the dangers of lengthy hospital care is that the institution comes to be regarded as " the ante-room of death ", and not as a place of temporary treatment.

The aged sick have the same need for, and claim to, expert diagnosis and treatment as have the young, and they should be cared for by the same services. However, it is essential in many instances to build upon the existing services in order to assure the care of the chronically ill. One solution for the care of chronic cases is the provision of rest homes, small homes in which the inmates can lead a normal life under medical and nursing supervision.

Special geriatric services may be required for meeting the medical emergencies of the aged, and such services should provide high-grade care, including skilled diagnosis, treatment, and a full range of rehabilitation. The last is particularly important in the case of the aged. A considerable proportion of the patients of such geriatric units (up to 70%) should be ready for discharge to their homes in six or seven weeks.

In general, there is need for hospitals for both chronic and acute diseases, but the two types of institution should work in the closest possible collaboration, being located close to each other or, at least, being under the same executive direction. This is important as a means of preventing the " chronic " hospital from being considered as a somewhat inferior institution, with consequent unfortunate effects on staffing. The aim of both types of hospital is the same—to send the patient back to his home and familiar surroundings as soon as possible and with the greatest possible improvement in his physical and mental condition.

Mental health

The mental health problems of the aged are also demanding the increasing attention of public health services. There is an augmentation in hospitalization for mental disorders in the older age groups.

Clinical and sociological investigation in the mental hospital at Göteborg, Sweden, showed that about one-third of the cases in the " psycho-geriatric " group suffered from organic cerebral disease, one-third from the so-called " involutional psychoses ", and the remainder from clinical neuroses of later maturity. The prominence of the neuroses indicates that much more must be done to promote mental health in the aging, and that the subject calls for prophylactic action, both medical and social. A need for more research is also evident.

In a number of countries there are child guidance clinics for neurotic children and their parents, and special consultative centres for problem families. Similar clinics or centres might, perhaps, be established for the aged, who should, nevertheless, be considered as ordinary members of families, not as a group apart. Such services might help to solve some of the problems that arise from

the various stresses and strains to which the aged are particularly exposed.

Role of the central administration

While the actual functioning of services for the medical and social care of the aged must generally be entrusted to local bodies, official and voluntary, the central government administration has an essential role to play in guidance, provision of financial grants, and promotion of research. Valuable demographic studies also come within the province of the central authorities, as does co-ordination of the information supplied by local bodies. The central administration has, in addition, an important place in health education of the public regarding the medical and social problems associated with the aging of the population.

SOUTH AMERICAN SEMINAR ON MENTAL HEALTH

A seminar on mental health, organized by the Government of Uruguay and the Pan American Sanitary Bureau, which acts as WHO Regional Office for the Americas, was held in Montevideo in July 1955. This seminar, the first on the subject to take place in South America, was attended by representatives from Argentina, Brazil, Chile, Ecuador, Paraguay, Peru, Uruguay, and Venezuela.

The seminar covered a wide range of topics, with particular emphasis on the prevention and treatment of mental disorders, the mental health problems of children, the technical training of those engaged, directly or indirectly, in mental health work, and the mental health education of the public.

Prevention

Attempts to prevent mental disorders should begin with consideration of socio-economic and health factors, which are often at the root of such disorders. Next in order is attention to the mental as well as the physical health of pregnant women, because of the subsequent influence upon the child. Then comes the problem of infant care, and in this stress must be laid on the importance of keeping mother and child together during the early, formative years. A harmonious family life is most important in the emotional development of the child, and every effort should be made to preserve the family unit (abandonment of the home by the father seems to be a frequent occurrence in some countries of South America). At adolescence, the problem arises of providing the child with knowledge of sexual physiology, which, if it cannot be properly handled by the parents, should be entrusted to teachers or health workers qualified to give the necessary instruction.

Other considerations in preventing mental illness discussed at the seminar were the psychological implications of hospitalization of children; the provision of recreational and educational facilities to promote the healthy social and emotional development of children; and education of the public in mental health principles, especially of parents and of members of the community who have an influence on others, such as teachers, clergymen, nurses, and social workers. Mention was made of the desirability of premarital health examinations, to prevent the transmission of disease and to assess the individuals' maturity and suitability for entering into marriage.

Treatment

In their discussion of treatment of mental illness and its ramifications, the seminar participants emphasized the necessity for

specialist care which includes medical, paedagogical, social, and educational aspects. Particular attention was given to the psychological problems of children and to ways of dealing with these problems—for example, through child guidance or behaviour clinics, in which psychiatrists, psychologists, and social workers all collaborate. Special classes and facilities should be arranged for children who are mentally deficient or have learning difficulties. Whenever possible, institutionalization of children should be avoided.

From the viewpoint of psychiatry and mental health, delinquency in children or adolescents should be regarded as a problem of behaviour and treated as such. The idea of prevention and treatment should replace that of punishment of misdemeanours, the delinquent being made the subject of study rather than the object of retributive action.

Education of parents and of the general public

Education of parents and of the general public in matters of mental health is a primary requisite in promoting good mental health in children. Such education should stress the positive aspects of mental health, avoiding descriptions of pathological symptoms. The teaching content and methods must be adapted to local conditions, to the socio-economic and cultural milieu of the people concerned.

Mass media such as the cinema, broadcasts, and the press may be useful in mental health education of the public, but methods based on instruction of small groups, with the active participation of the members of the group, are thought to be more effective.

Training of mental health workers

Child psychiatry was felt by the seminar participants to be a speciality the practice of which calls for special knowledge and appropriate personal qualifications. The preparation of this specialist should include basic training in psychiatry, psychology, and paediatrics, and should comprise practical experience as well as theory.

Members of the medical, educational, and other professions which have to work with children—e.g., physicians, paediatricians, nurses, psychologists, teachers, and social workers—should have some knowledge of child psychology and psychiatry.

Plans for mental health programmes

The seminar afforded the participants an opportunity to review the mental health programmes and plans of the various South American countries. The picture which emerged showed that in this region mental health work is, for the most part, still in its initial stages, and that its radius of action is still very limited and is confined largely to urban areas. Technical personnel is in short supply and is often inadequately trained. Institutional facilities are insufficient.

There is a great need for an assessment of the magnitude of psychiatric and mental health problems in South America, and studies towards this end should be encouraged. Generally speaking, it is considered that even the most urgent requirements are not being met.

The present tendency is to combine mental health work with public health activities at health centres, but the desirability of having special guidance clinics for children is also recognized. An important first step in focusing attention on mental health principles and problems as applied to children is arousing the interest of South American parents.

The seminar participants suggested that a South American centre or institute for training mental health workers should be established, using as a nucleus the institutions which already exist in certain countries. The assistance of WHO and the Pan American Sanitary Bureau is being sought for carrying out this proposal.

Reports of Expert Groups

AMPUTEES AND PROSTHESES

The problem of the amputee is one of world-wide import, with social, economic, industrial, and psychological concomitants affecting many more people than those actually suffering amputation. Nations seek advice on measures which have been, or could be, evolved for preventing amputation and reducing disability by proper rehabilitation. As a means of bringing together and disseminating information on this subject, WHO convened, in August 1954 in Copenhagen, a conference on prosthetics in which the United Nations, the International Society for the Welfare of Cripples, and the World Veterans Federation also participated. The report on this conference has now been made available in the *Technical Report Series* of WHO.[1]

This report opens with a consideration of the incidence, causation, and prevention of amputation. Statistics on the incidence of amputation are at present inadequate, and their collection should be encouraged so that health authorities intending to set up an artificial limb service may have some knowledge of the extent of the problem with which they are faced, and so that the information on causes of amputation which such statistics may reveal may contribute to knowledge of prevention.

The statistics that are available show that the number of amputees in certain Western countries varies between 0.5% and 1.25% of the population. Data from the USA give some idea of the extent of the problem among civilians: while approximately 20 000 persons suffered amputation in the Armed Services during the Second World War, during the same period 120 000 civilians lost their limbs from accident and disease.

Major sections of the report deal with basic principles and practices in the rehabilitation of the amputee, including surgical and post-amputation treatment and the psychological aspects of this treatment; the selection, fitting, and use of artificial limbs; and vocational guidance and training for, and selective placement of, the amputee. Among other subjects covered are the essentials of a limb-fitting service, the training of relevant personnel, and administrative problems. Detailed descriptions of simplified artificial limbs are given. Lastly, problems requiring research and matters which might call for international action are considered.

The report also contains a number of annexes of a practical nature: (1) Reports on the causes of amputation, (2) Review of existing types of prostheses, (3) Lay-out and equipment of a large limb-fitting centre, (4) Method of applying a nylon film to leather work, (5) Illustrations of simplified artificial limbs, and (6) a selected bibliography.

[1] *Wld Hlth Org. techn. Rep. Ser.*, 1955, **100**. 52 pages. Price: 3/6, $0.60, or Sw. fr. 2.—. Published in English, French, and Spanish.

Health Legislation

THE CONTROL OF INSECT VECTORS IN INTERNATIONAL AIR TRAFFIC

The control of insect vectors in international air traffic is at present governed by the International Sanitary Regulations and by paragraph 2 of Article XVII of the International Sanitary Convention for Aerial Navigation, 1944, this paragraph being maintained by a particular provision of the Regulations.

The value of the measures taken in application of international sanitary legislation is no longer in doubt, seeing that insects which are the vectors of serious diseases such as yellow fever, malaria, filariasis, dengue fever, plague, typhus, trypanosomiasis, and others may be transported from one country to another by means of aircraft. Studies have been made which show that the vitality of such insects is not necessarily affected by changes in temperature or atmospheric pressure, even during long flights, and that the vibration of modern aircraft does not unduly affect their activity. It seems also to be established that by means of air transport certain species of insects have been introduced into territories where they were formerly unknown. The success or failure of campaigns for the control of certain diseases, such as malaria, may thus depend on air transport.

In addition to the International Sanitary Regulations, many countries have special requirements designed to prevent the introduction of insect vectors of disease into their territories by air.

Five expert advisory bodies of the World Health Organization have made recommendations on the disinsection of aircraft: the Yellow Fever Panel, the Expert Committee on International Epidemiology and Quarantine (now replaced by the Committee on International Quarantine), the Expert Committee on Insecticides, the Expert Committee on Malaria, and the Committee on International Quarantine.

A study in the form of an analytical survey of the regulations for disinsection of aircraft of 98 states and territories has just been published in the *International Digest of Health Legislation*.[1] The material is arranged under the following headings: Introduction; Statement of the problem and review of the literature; Review of present-day practices (disinsection requirements, when disinsection is carried out, method of disinsection, formulations of insecticides used, dosage and time of application, measures taken to prevent spread of agricultural pests); Recommendations made to the Organization in regard to disinsection of aircraft; Discussion; The present position; and Conclusion. Four appendices—dealing respectively with disinsection requirements; when disinsection is carried out; formulations of insecticides used, dosage, and method of application; and measures taken to prevent the spread of agricultural pests—summarize the material studied.

This study shows that the requirements for the disinsection of aircraft and the methods used vary considerably in different countries. Nevertheless, the experience gained in the application of disinsection measures and the important advances made in the use of modern insecticides will perhaps enable the World Health Organization in the near future to recommend to health administrations simple and effective methods for the control of certain diseases in international air traffic.

[1] *Int. Dig. Hlth Leg.*, 1955, **6**, 377-435. This study is also available as a pamphlet (Price: 3/6, $0.70, or Sw. fr. 2.—). Published in English and in French.

Notes and News

Nutrition Training Course

A second training course in nutrition for personnel expected to work in Africa is being given in Marseilles, France. It began on 4 October and is lasting until 10 December 1955. The course, which is in French, is sponsored by the French Government, FAO, and WHO; it will be followed by a period of practical work in Africa. A similar course was held, also in Marseilles, in 1952; and it was the success of this first course which led to the organization of the present one.

The course is being attended by medical officers, pharmacists, chemists, agricultural experts, and veterinarians. WHO has provided fellowships for participants from Angola, the Belgian Congo, French West Africa, Madagascar, Morocco (French Zone), Mozambique, and Somaliland under Italian Trusteeship.

Approximately 145 lectures and a series of 45 practical work sessions, together with discussions and visits, make up the programme of the course. Thirty-four specialists are covering the various aspects of nutrition for about forty course participants. Attention is being focused on the nutritional problems particular to Africa, account being taken of sociological factors involved and of the food resources of the continent.

This training course is only part of WHO's assistance in efforts to improve nutrition in Africa. The Organization is co-operating, through the provision of the services of two specialists, in the work of the research group on malnutrition among infants of the Medical Research Council at Kampala, Uganda. It has also supplied consultants to assist the Governments of Basutoland, Uganda, and Tanganyika in nutrition surveys and in mapping out programmes to prevent and alleviate dietary deficiencies. In October 1955, a WHO consultant, Professor A. Woodruff, was in Mauritius investigating one of the nutritional problems of public health importance—anaemia.

During the early part of 1956, the Organization's Inter-Regional Adviser on Nutrition will be visiting Africa to make a study of prevalent nutritional problems in connexion with public health activities.

WHO Fellowships Programme in Africa

One of the WHO activities in Africa which is showing a steady increase is the award of fellowships. Between 1950 and 1953, the number of fellowships in the Region totalled 92; but, in 1954 alone, the number of awards was 81, and the figure for 1955 is expected to reach 135. The fellowships programme now covers 32 of the 43 countries and territories of the African Region.

As in other WHO Regions, many of the fellowships awarded in Africa are for special training courses, often those organized or aided by WHO. For example, in 1955 there were 43 grants of this kind, including 11 fellowships for a course in malaria prophylaxis given in Yaoundé; 4 for two courses in social paediatrics organized, in Paris, by the International Children's Centre; 2 for the anaesthesiology course in Copenhagen; 5 for an insect control course in Rome; and 2 for a course in dermatology and venereology held in Madrid. In addition, fellowships were awarded to enable their holders to attend a special course on environmental control given at the London School of Hygiene and Tropical Medicine, and others for a course leading to the Diploma in Content and Methods of Health Education organized by the Institute of Education of London University.

During the past year, fellows of the African Region studied in 33 different countries. The present trend, however, is to place a greater proportion of fellowships within the Region, where possible, in order to promote reciprocal knowledge of African problems, particularly those concerning the control of the principal endemic diseases.

Seminar on Sanitary Engineering

A seminar on sanitary engineering for engineers from Mexico, Cuba, the Dominican Republic, Haiti, and other Caribbean countries and territories was held in Puerto Rico from 1 to 10 November 1955, under the auspices of WHO, through its Regional Office for the Americas. It was the third seminar of this type to take place in the Region, one having been held in Managua, Nicaragua, in 1952, and another in Caracas, Venezuela, in 1954.

The main subjects of the seminar, which included round-table discussions and field trips as well as lectures and demonstrations, were: water supply and sewage disposal in the Caribbean area; the role of the sanitary engineer in public health; the education and training of sanitary engineers and auxiliary personnel; food control; and housing problems.

Survey of Nursing Resources in the Americas

The Pan American Sanitary Bureau (PASB), which serves also as WHO Regional Office for the Americas, is assisting the nursing associations of a number of American countries in surveying national nursing resources. The data collected will include the number of nurses, their level of education and training, and their specific type of employment. These surveys are intended partly to supply background information as a basis for the technical discussions to be held at the time of the Ninth World Health Assembly (June 1956, Geneva), the subject of which is " The Nurse—Her Education and Role in Health Services ".

The Brazilian Nurses' Association is making an even more detailed study of nursing resources than that planned by the PASB. An advisory committee for the project has been set up which includes representatives of the Brazilian Ministry of Health, the Ministry of Education, the Brazilian Nurses' Association, the Serviço Especial de Saúde Pública, the Rockefeller Foundation, and PASB/WHO. The PASB has been requested to provide a nurse adviser to assist in carrying out the survey; and the Rockefeller Foundation has allotted $10 000 for the project, and will also grant a three-month fellowship to a Brazilian nurse to enable her to study survey techniques in the USA.

Yellow Fever in the Americas

An outbreak of yellow fever in Panama in 1948 spread steadily northward between that year and 1954. In 1954 a single case was found in Honduras, but no other cases were reported in Central America during that year. The Pan American Sanitary Bureau (PASB), which acts also as WHO Regional Office for the Americas, sent a consultant, Dr Jorge Boshell, to Central America to make studies of the expected path of the disease.

Extensive investigations carried out by PASB consultants in the summer of 1955 in northern Honduras and the Peten region of Guatemala indicated that this wave of jungle yellow fever had perhaps reached the end of its course.

Continent-wide efforts to eradicate *Aëdes aegypti*, the urban carrier of yellow fever, are making considerable headway. Experience has shown that eradication campaigns call for thoroughness and constant vigilance. The development in an occasional strain of *Aëdes aegypti* of resistance to residual insecticides such as DDT is causing concern and is emphasizing the importance of another factor—time.

Dr J. Austin Kerr, former Director of the Virus Research Center, Poona, India, has been assigned by the Rockefeller Foundation to work with the PASB as a special adviser in the study of yellow fever and related virus diseases. Dr Kerr is expected to visit Central America, Colombia, Brazil, and other countries in the Region.

International Training Course for Health Physicists

An international training course for health physicists—the first international course of this kind—was held at the Karolinska

Hospital, Stockholm, from 14 November to 16 December 1955. The course was organized by the Government of Sweden and the WHO Regional Office for Europe, in co-operation with the national atomic energy agencies of a number of countries, notably the USA. It was directed by Dr E. E. Anderson, of the Oak Ridge National Laboratory, USA, whose services were made available through the courtesy of the U.S. Atomic Energy Commission. Other lecturers were Professor J. Coursaget, Centre National d'Etudes Nucléaires, Saclay, France; Mr M. F. Fair, Oak Ridge National Laboratory, USA; Dr W. G. Marley, Atomic Energy Research Establishment, Harwell, England; and Professor R. M. Sievert, Institute of Radiophysics, Karolinska Hospital, Stockholm. Attending the course were scientists from Belgium, Denmark, France, Germany, Iceland, Italy, Netherlands, Norway, Sweden, and Switzerland.

The course provided training in the health aspects of the various applications of nuclear energy and served as a means of exchange of experience among scientists from countries where research on radiation protection has followed different lines. It was intended particularly for physicists from European countries in which atomic energy programmes are now in a rapid and comparatively early stage of development.

Among the subjects covered were: general principles of health physics supervision at reactors and radiochemical laboratories; radiation measurement; monitoring methods; laboratory design; safety measures in factories; control of the environment; reactor site selection; and waste disposal.

Study Group on the Measurement of Levels of Health

A WHO study group on the measurement of levels of health met in Geneva from 24 to 28 October 1955 to discuss factors affecting health and health indicators. Among the specific subjects covered were possible indicators based on available statistical material and new indicators to be designed in the fields of nutrition, communicable diseases, environmental sanitation, health aspects of housing, and mental health.

The group considered needs for further studies, particularly by using sample survey methods, to elicit possible new and more suitable indicators of health.

Dr I. V. Hiscock, Chairman of the Department of Public Health of Yale University, New Haven, Conn., USA, was Chairman of the group, and Dr H. Romero, Professor of Public Health at the University in Santiago, Chile, acted as Rapporteur. Other participants were: Mr Raymond Firth (London), Mr H. K. Friis (Copenhagen), Dr R. H. Hazemann (Paris), Professor P. C. Mahalanobis (Calcutta), Dr H. Muench (Boston), and Sir Andrew Davidson (WHO Consultant).

Statistical Report on Deaths from Cardiovascular Diseases

Volume 8, number 10, of the *Epidemiological and Vital Statistics Report* is devoted to data on deaths from (*a*) vascular lesions affecting the central nervous system, and (*b*) diseases of the circulatory system. Information is given, by sex and age for one particular year (1951, 1952, 1953, or 1954, depending on the country), for Australia, Austria, Canada, Ceylon, Denmark, Finland, France, Federal Republic of Germany, Ireland, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, and the USA.

Mortality from all causes for the same year is also included, so that deaths from the diseases classified within the groups A70 and A79-A86 in the Intermediate List of 150 Causes for Tabulation of Morbidity and Mortality (*Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death*, page 355) and from selected items of the Detailed List may be seen in relation to the total deaths.

Review of WHO Publications

Bulletin of the World Health Organization, 1955, Volume 13, Number 2 (pages 209-362)

This number of the *Bulletin* is devoted to a variety of subjects. The first two articles, by J. Gaud, concern bilharziasis in western and central Africa and in Madagascar, Réunion, and Mauritius. They are followed by a report on an influenza epidemic in Egypt in 1952-3, by I. S. Zaghloul, F. Rizk & M. Abdel Kader. The fourth article is " Mal del Pinto in Mexico ", by Francisco Marquez, Charles R. Rein & Oswaldo Arias. Next comes a report on comparative studies on lecithin as a component of cardiolipin antigens, by M. Pontecorvo, F. Rappaport, V. Tompkins & T. Vogelsang. This is followed by a study on homogenous BCG suspensions prepared with Tween 80, described by Yoji Obayashi, Tokujiro Noguchi & Kesao Takano. F. W. Knipe reports on the results of an experiment in mosquito control, dealing specifically with characteristics of nozzle tips used on mosquito-control equipment and with the measurement of materials lost through rebound and atomization. Lastly, J. L. Troupin contributes a quantitative study of medical schools and physicians (see *Chronicle of the World Health Organization*, 1955, **9**, 312). The first two articles are in French, with résumés in English; and the rest are in English, with résumés in French.

Bulletin of the World Health Organization, 1955, Volume 13, Number 3 (pages 363-490): number on immunization methods

Although the control of many communicable diseases in Europe has rapidly improved in recent years, there remain a number of diseases which are capable of control but which are not yet controlled or only inadequately so. It is estimated, for example, that in 1953 the equivalent of at least two million dollars was spent in Europe on the medical care of 60 000 reported diphtheria cases. The expenditure of a small fraction of this amount on adequate immunization—suitable and sufficient antigens were available—would have resulted in a great economy as well as in the prevention of disease, disablement, and death.

A conference held by the Regional Office for Europe of the World Health Organization, in collaboration with the Government of the Federal Republic of Germany, in Frankfurt-on-Main from 17 to 20 March 1954 brought together public health administrators, paediatricians, epidemiologists, and bacteriologists to discuss recent advances in immunization for the control of the common communicable diseases—diphtheria, whooping cough, tetanus, smallpox, measles, poliomyelitis, tuberculosis, and scarlet fever.

This issue of the *Bulletin of the World Health Organization* contains a selection of the papers presented at that conference. They have all been revised and brought up to date by their authors with the exception of the contribution by P. Lépine, which is published in the form in which it was originally submitted.

In the first paper, L. Greenberg reviews the events leading to the development of diphtheria prophylaxis and discusses the principles governing the choice of prophylactic and the conditions necessary for diphtheria immunization to be successful. Active tetanus immunization is discussed by I. Scheibel, who points out that this has proved a safe method of protection against tetanus both in animal experiments and in the course of two world wars.

W. C. Cockburn, in the first of two contributions, deals with the methods to be used in large-scale field trials of active immunizing agents, laying special emphasis on the pertussis vaccine trials being carried out by the

Whooping-cough Immunization Committee of the Medical Research Council of Great Britain. In his second paper, he reviews the use of mixed diphtheria-pertussis-tetanus antigens in the light of the information which has become available in recent years. It seems clear that mixed antigens will be very useful in future immunization campaigns, although much further study is necessary, especially on the immunizing effect of the pertussis component, before their value can be finally assessed.

In an article on passive immunization against measles, A. Bertoye deals first with the choice of prophylactic, including gamma globulin, and then with the factors governing the selection of persons to be protected and the choice between absolute prevention and attenuation of the disease.

The developments made in the last thirty years in the production of smallpox vaccine are reviewed by D. McClean, who also discusses the duration of immunity and the protection afforded after contact with smallpox.

P. Lépine, in the following article, reviews the various methods of poliomyelitis prevention and the principles on which they are based. He then considers in detail the problem of vaccination against poliomyelitis with various types of vaccine and the difficulties which have yet to be overcome.

R. Prigge discusses the development of diphtheria toxoid and the use and influence of different adjuvants on the activity of this prophylactic. In the last article, O. Günther deals with the phenomena of the antagonism and synergy of antigens, the importance of which in preventive vaccination may well be considerably greater than was formerly supposed.

With the exception of the contribution by P. Lépine, all the articles are in English, with résumés in French.

It is believed that the application of the principles and procedures reported in this selection of papers is likely to contribute considerably towards solving some of the major communicable disease problems still facing public health authorities and the medical profession.

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